**Factors associated with daily use of both benzodiazepines and opioids among people who use non-prescribed opioids**

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**Abstract**

**Background:** Co-use of benzodiazepines and opioids significantly increases fatal overdose risk, yet few studies have examined co-use of these drugs when obtained both licitly and illicitly. We examined associations of daily co-use of prescribed benzodiazepines/tranquilizers (BZD/TRQ) and prescribed and non-prescribed opioids among people who reported using street opioids in the past month (PWUO).

**Methods:**PWUO (N=417) were recruited from Baltimore City and neighboring Anne Arundel County, Maryland and surveyed on sociodemographic characteristics, structural vulnerabilities, healthcare access and utilization, substance use, and overdose experiences. Multivariable logistic regression was used to identify factors associated with self-reported co-use.

**Results:**Participants were 46 years old on average, predominantly male (62%), Black (74%), and unstably housed (64%). Daily co-use was reported by 22%. In multivariable analyses, odds of co-use were significantly higher among participants who did not have a high school degree/GED (aOR=1.72, CI 1.02, 2.89), endorsed receiving mental health treatment in the past 6 months (aOR=2.11, CI 1.27, 3.52), reported daily use of cocaine (aOR: 3.59, 95% CI: 1.98 – 6.49), and synthetic cannabinoids (aOR: 3.09, 95% CI: 1.39 – 6.90). Odds of co-use were significantly lower among Black participants compared to white participants (aOR: 0.38, 95% CI: 0.18 – 0.81).

**Conclusions:**A diversity of factors was associated with co-use of BZD/TRQ and opioids among an urban and suburban sample of PWUO. Clinicians who work with PWUO or who prescribe BZDs or opioids should take special attention to screen these patients for co-use, as the clinical encounter provides a unique opportunity to engage these patients.

**Key words:** co-use, nonmedical use, benzodiazepines, opioids, overdose, mental health

1. **Introduction**

Poisoning deaths are the leading cause of unintentional death in the United States, with the highest number of fatal overdoses ever recorded (100,306) occurring in the 12-month period ending in April 2021, constituting a 28.5% increase from the same period the year before (CDC, 2021). Most of these fatalities involve opioids (Mattson, 2021), and recent studies show mortality rates for opioid overdoses involving benzodiazepines (BZDs) increased ten-fold from 1999 to 2017 (Tori et al., 2020). Tranquilizers (TRQ) are a historic drug class encompassing both “minor tranquilizers” (benzodiazepines such as clonazepam) and “major tranquilizers” (antipsychotic medications such as haloperidol) (Carpenter and Davis, 2012), but are colloquially understood to refer primarily to anxiolytic medications such as BZDs (Schmidt et al., 2016), which function by depressing the central nervous system.

BZDs are often used nonmedically in conjunction with other drugs (SAMHSA, 2011), sometimes to potentiate or prolong drug effects (Chen et al., 2011), and sometimes to mitigate withdrawal symptoms (Lankenau et al., 2012). The interacting pharmacokinetics between BZDs and opioids are well established: co-use of the two substances together significantly increases risk of fatal overdose due respiratory drive suppression and increased sedation, increasing the risk for hypoxic respiratory failure (White and Irvine, 1999). The contamination of the drug supply chain with fentanyl and fentanyl analogues poses an increasing risk of death for individuals using street opioids (PWUO) (Ciccarone, 2019) not just because of their potency, but also because these compounds have longer half-lives relative to heroin (Davies et al., 1996).

Successfully identifying patients who co-use BZDs and opioids (both prescribed and non-prescribed) is critical to provide interventions to reduce risk of fatal overdose, especially in the current adulterated opioid market. Clinical interventions such as Motivational Interviewing and Screening, Brief Intervention, and Referral to Treatment (SBIRT) help evaluate and identify risky behaviors and help patients resolve their ambivalence regarding behavior change (Saitz, 2007; Smedslund et al., 2011). The clinical encounter is an accepted and feasible opportunity to engage opioid-using patients in harm reduction behaviors such as utilizing naloxone (Behar et al., 2018), which is associated with reduced overdose mortality (McDonald and Strang, 2016). Other strategies to reduce overdose risk include education about using with others (National Harm Reduction Coalition, n.d.) and testing street drugs for contamination prior to use (Mars et al., 2018).

Factors associated with BZD use among PWUO have been well studied. In a sample of adults endorsing past 30-day nonmedical prescription opioid use, Bouvier et al. (2018) found that regular BZD use (“at least monthly” of either prescribed or non-prescribed BZDs) was associated with being white and ever being diagnosed with a psychiatric disorder, particularly bipolar disorder, or anxiety. McHugh et al. (2017) also found past-month non-prescribed BZD use was associated with higher anxiety sensitivity among a sample of adults receiving inpatient treatment for opioid use disorder. In a sample of PWUO in Vancouver, Tucker et al. (2016) found that past six-month BZD use (either prescribed or non-prescribed) was associated with being white, daily heroin injection and daily cocaine injection. In another sample of PWUO, Mateu-Gelabert et al. (2017) found that regular (>3x/week) use of non-prescribed BZD was associated with history or regular cocaine use and history of benzodiazepine prescription.

Less is known about factors associated with daily use of BZDs and opioids together, i.e., “co-use”. Although there is no standardized definition of “co-use,” criteria typically involve using the two substances closely in time such that the two have overlapping physiological effects. Cropsey et al. (2015) used urine toxicology screens to identify BZD and opioid co-use among a cohort of incarcerated individuals, and found that being white, female, unemployed, with a history of being prescribed psychiatric medications, having seen a physician in the past two years, or past diagnosis of cannabis or cocaine use disorder were all associated with co-use.

The aim of this study was to evaluate factors associated with co-use among PWUO who also have a prescription for BZD/TRQ. These individuals makeup a unique population of people who use drugs who interface with the healthcare system to obtain prescription medications. This paper explores factors associated with daily co-use of opioids (both non-prescribed and prescribed) and prescribed BZD/TRQ among a sample of PWUO in an urban and suburban context.

**2. Methods**

**2.1 Participants**

The study sample came from The Peer harm Reduction of Maryland Outreach Tiered Evaluation (PROMOTE), a mixed-methods, cross-sectional study of people who use drugs (PWUD) in Baltimore City (BC), Maryland and neighboring Anne Arundel County (AAC), Maryland. As has been previously described (Schneider et al., 2021), Anne Arundel County is formally considered part of Baltimore City’s metropolitan statistical area but is best characterized as suburban due to its substantially lower population density (1296/mile in Anne Arundel, 7672/mile in Baltimore City) (United States Census Bureau, 2019). It is situated between Baltimore City, MD, and Washington D.C., and contains Maryland’s capital, Annapolis.

Participants were recruited from street-based locations identified using geospatial analyses of drug-related arrest data and/or fatal and non-fatal overdose data. Baltimore arrest data was obtained through the city’s “Open Baltimore” data repository. In Anne Arundel County and Annapolis, local police departments provided arrest and fatal/non-fatal overdose data for their respective locations. For context, Annapolis resides within Anne Arundel County; the county and Annapolis [city proper] have distinct police departments, thus the need for both during spatial analyses of these locations.

Heat maps were developed using ArcMap 10.4.1 and geographical locations with possible drug-related activities were identified. Time signatures associated with arrests in each area were extracted to develop a sampling frame that consisted of venue-day-time units (geographical location, day of the week, four-hour periods), as described previously (Rouhani et al., 2021; Tomko et al., 2022). Recruitment occurred in three distinct waves, in different locations: BC (Baltimore City) participants were recruited from 15 zones from July – October 2018 (Wave 1, N=274) and April – July 2019 (Wave 2, N=291) and AAC (Anne Arundel County) participants were recruited from seven zones from November 2019 – March 2020 (Wave 3, N=173; data collection activities were stopped prematurely due to the COVID-19 pandemic).

Interested individuals approached the study van or encountered study staff on the street and were screened for eligibility on the study van. In BC, eligibility criteria included age 18+ and use of non-prescription opioids within the past month. In AAC, eligibility criteria included age 18+ and use of non-prescription opioids within the past six months. After providing informed consent, eligible participants completed a 30-minute Audio Computer-Assisted Self-Interview (ACASI) on a tablet with a trained interviewer present to answer participant questions. Following the interview, participants were compensated with a $25 VISA gift card. This stu dy received ethical approval by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

To compare BC and AAC participants, we created a merged dataset and used screener variables to manually limit the AAC sample to only those participants who used non-prescription opioids within the past month (n=149). This analysis was limited to participants from BC Wave 2 and AAC as questions on benzodiazepine/tranquilizer use were not asked in BC Wave 1. Our final analytic sample included N=417 participants with complete data on the outcome measure and included covariates (n=281 BC Wave 2, n=136 AAC).

**2.2 Measures**

*2.2.1 Outcome: benzodiazepine/tranquilizer & opioid co-use.*

Participants reported substances used and frequency/method of use that was “recent”, i.e., within the past 3 months. Participants were not asked about concurrent use of BZD/TRQ and opioids; therefore, we defined co-use as the daily use of both BZD/TRQ prescribed by a medical provider and daily use of any opioid (heroin, fentanyl, opioid pills), either prescribed by a medical provider or used without a prescription. This will henceforth be referred to as “co-use.” If a participant used opioids or BZD/TRQ less frequently than daily (for example, a few times per week), they were coded as “no co-use.”

*2.2.2 Substance use & overdose*

We created separate binary variables to indicate past three months of daily use of cocaine, crack, and synthetic cannabinoids. We also constructed a binary variable to indicate recent injection vs. non-injection use of any drugs. Participants reported the frequency of their weekly alcohol consumption, which we analyzed dichotomously (4+ drinks per week vs. less or none). We constructed a binary variable to identify participants who had a recent overdose (within the past 3 months vs. less recent or never).

*2.2.3 Sociodemographic characteristics & structural vulnerabilities*

Age was analyzed continuously, and sex (male/female) was analyzed dichotomously. Participants reported their race/ethnicity by selecting all applicable options from a predetermined list; race/ethnicity was trichotomized for analysis (single race white, single race Black, Hispanic/Native American/multiracial). Educational attainment was captured categorically and analyzed dichotomously (did not complete high school/GED vs. higher educational attainment). Income source was analyzed dichotomously with a constructed variable comparing participants who reported full- or part-time legal employment as their primary income source to those who reported other primary income sources. Current homelessness was analyzed dichotomously.

*2.2.4 Health care service access & utilization*

Current health insurance coverage and past three-month emergency department visits were captured and analyzed as a binary variable (yes/no). Participants indicated their most recent experience receiving mental health treatment, which we analyzed dichotomously (within the past 6 months vs. more than 6 months ago or never).

**2.3 Data analysis**

First, we compared the distribution of all covariates of interest by co-use using Chi-Squared tests for categorical variables and t-tests for continuous variables.

We then conducted unadjusted logistic regression with independent variables of interest. Study wave (location), age, sex, and race were included in the multivariable model a priori. Based on prior findings (Gladden et al., 2019) on multidrug use and the outcome, daily use of all remaining surveyed substances not included in the outcome (cocaine, crack, synthetic cannabinoids, alcohol) was also included a priori. Given its association with overdose risk, we also included injection of any drug a priori. Remaining covariates were identified using a manual forward stepwise procedure in which significant variables in unadjusted models at the p<0.05 level were retained. Collinearity was assessed using VIFs and a polychoric correlation matrix; variables were not collinear. We then applied a Goodness-of-Fit test to our final model.

**3. Results**

**3.1 Sample characteristics.**

Participants’ mean age was 46 (SD=11.5) years and the majority were Black (74%), male (62%), had a high school diploma or higher (62%), and were recruited from Baltimore City (67%). Forty percent of participants reported having received mental health services within the past six months. Over one-fifth of the sample (22%) reported daily co-use of opioids and BZD/TRQ (Table 1).

**3.2 Bivariate analysis.**

Variables significantly associated with co-use of opioids and BZD/TRQ in unadjusted models (Table 2) included: female sex (50% in co-use group vs 35%, OR 1.83, CI 1.15-2.91, p=0.011); lacking a high school diploma or GED (51% in co-use group vs. 35%, OR=1.91, CI 1.20, 3.04, p=.007), receiving mental health services in the past 6 months (54% in co-use group vs. 36%, OR=2.11, CI 1.32-3.37, p=.002) as well as daily cocaine use (40% in co-use group vs. 16%, OR=3.54, CI 2.12-5.90, p<.001), daily crack use (56% vs. 39%, ; OR=2.02, CI 1.27, 3.22, p=.003), daily synthetic cannabinoid use (18% vs. 7%, OR=3.23, CI 1.62, 6.42, p=.001), and any injection drug use (45% vs. 32%, OR=1.79, CI 1.12-2.87, p=0.015).Study location was not significant in bivariate findings.

**3.3 Multivariable analyses**

In multivariable analyses, significant correlates of co-use included (Table 2): lacking a high school diploma or GED, (aOR=1.72, 95% CI=1.02-2.89, p=0.041), receiving mental health services in the past 6 months (aOR=2.11, 95% CI=1.27-3.52, p=0.004), daily use of cocaine (aOR=3.59, 95% CI: 1.98 – 6.49, p<.001), and daily use of synthetic cannabinoids (aOR=3.09, 95% CI: 1.39 – 6.90, p=0.006). Odds of co-use were significantly lower among Black participants compared to white participants (aOR=0.38, 95% CI: 0.18 – 0.81, p=0.012).

**4. Discussion**

Over one fifth of participants in a sample of street-based PWUO reported daily co-use of opioids and BZD/TRQ. We found that odds of co-use were significantly higher among participants who were white, did not receive a high school diploma/GED, engaged in polysubstance use, and recently received mental healthcare services. These findings highlight important links between co-use and sociodemographic factors, structural vulnerability, substance use patterns, and mental health service access.

Although factors influencing a clinician’s decision of whether to prescribe BZD/TRQ’s are poorly understood, it is well documented that clinician’s prescribe fewer BZD’s and fewer opioids to racial and ethnic minorities (Peters et al., 2015; Rambachan et al., 2021). Our findings highlight that racial disparities may contribute to differences in co-use patterns of opioids and BZD/TRQ among white and Black patients. Black participants reported significantly lower co-use relative to white participants, which is consistent with previous findings that identified whites (Bouvier et al., 2018) at being at increased risk for co-use. This raises complex questions about possible under-treatment of anxiety symptoms in racial/ethnic minorities, and conversely, the over-treatment in whites. The persistence of racial disparities in prescribing practices for medications with clinical utility to reduce suffering warrants further examination by the medical community, as it calls into the question the role of racial bias and structural racism in healthcare delivery.

Co-use was significantly more prevalent among female participants in the bivariate model (p=0.011), but this association did not reach significance in adjusted models (p=0.055). Previous literature suggests that women are more likely to co-use BZD/TRQ with opioids (Cropsey et al., 2015). Women are more likely to be diagnosed with anxiety-related disorders relative to men (McLean et al., 2011) and are more likely to be prescribed both benzodiazepines (Agarwal and Landon, 2019) and opioids (Campbell et al., 2010) independently. Thus, they may have more opportunities for co-use. Female patients typically engage with the healthcare system more frequently than men (van Wijk et al., 1992), and special attention should be made to screen women in treatment settings.

Utilizing mental healthcare services in the past six months was also significantly associated with opioid and BZD/TRQ co-use in our analysis. While there is little existing evidence on possible links between healthcare utilization and co-use, it is possible that patients obtained their BZD/TRQ prescription during these healthcare visits. Alternatively, these visits may represent patients accessing a mental healthcare provider while receiving BZD/TRQ prescriptions from a primary care provider, and then required further mental health treatment. Psychiatric illnesses such as bipolar disorder and generalized anxiety disorder are associated with increased risk of co-use (Bouvier et al., 2018), and our finding highlights the critical role mental health providers could play in screening and identifying patients at risk for co-use.

Patients who co-use several drugs may be doing so to potentiate the physiologic effects associated with certain drugs (Mateu-Gelabert et al., 2017), which is seen with both street drugs as well as select psychoactive prescription medications (Applewhite et al., 2020). As tolerance to a drug increases, the tendency of some patients to use more substances to reach a desired effect may also increase. Our analysis found that daily cocaine and synthetic cannabinoid use were both significantly associated with opioid and BZD/TRQ co-use among our sample. Low education has also been documented as a risk factor for BZD/TRQ use (Fride Tvete et al., 2015), and is reflected in our results. This may be due to stress related to economic hardship, which may be exacerbated for PWUD as low education is often experienced in conjunction with other structural vulnerabilities, such as housing insecurity (Schneider et al., 2019).

BZD/TRQ prescriptions act as a linkage to the healthcare system, providing an opportunity for patients to interface with clinicians. Identifying factors associated with co-use helps clinicians better identify patients at highest risk in their practice. However, the identification of these patients is predicated on the assumption that patients will be forthcoming about non-prescription opioid use. PWUO often choose not to disclose their substance use histories to their providers (Pearce et al., 2020), and may delay or avoid accessing care due to experienced or anticipated stigma and discrimination from healthcare providers (Paquette et al., 2018). Patients receiving BZD/TRQ prescriptions may be particularly prone to non-disclosure for fear of clinical abandonment or retaliation by the provider, given increasing awareness of the risks for lethal overdose and increased prescription monitoring. To this end, clinicians should be intentional about adopting non-stigmatizing language when engaging with patients who may be at risk for co-use, as this may lead to trust-based disclosure of risky behaviors that could be addressed through counseling and potential intervention. Once identified, patients who co-use may benefit from harm-reduction counseling and interventions that mitigate the risk of fatal overdose, such as counseling on safer methods of co-use (e.g., using with others, carrying naloxone, using test shots if injecting, using fentanyl test strips) and receive training on naloxone administration. It is important for clinicians to explicitly address the risks of fatal overdose associated with co-use.

We caution against an interpretation that would lead clinicians to unequivocally reduce their prescription of BZD/TRQ for patients who are monitored and clinically benefit from their use. Although not without both short- and long-term risks, BZD/TRQ have clinical utility when judiciously prescribed to patients with panic disorder or other anxiety disorders refractory to treatment (American Psychiatric Association, 1998), which are often co-morbid with substance use disorders (SUDs) (Martins et al., 2012). Rather, clinical judgement should be used to identify which, if any, patients would benefit from sensible BZD/TRQ prescription, and an effort should be made to consistently screen these patients for co-use with appropriate counseling.

**4.1 Limitations**

This exploratory study has several limitations. Data were self-reported, cross-sectional and from a non-representative sample. Additionally, our co-use outcome measure was constructed using a variable that captured use of prescription benzodiazepines/tranquilizers as a single measure rather than as separate measures. Although there is literature demonstrating a colloquial understanding of TRQs as referring primarily to BZDs, tranquilizers do historically encompass a broader category of medications that include antipsychotics. While it would be unlikely for participants to affirm TRQ use if they were exclusively using antipsychotics, it is possible, and this class of medication has a different risk profile when co-used with opioids. Additionally, it is possible that study participants interpreted TRQ to reflect barbiturates (e.g., phenobarbital) and sedative-hypnotics (e.g., zolpidem, or Ambien), which may have a different risk profile when co-used with opioids. It is also important to acknowledge that this study does not differentiate between patients who co-used prescribed BZD/TRQs and prescribed opioids that were prescribed by the same provider from those who accessed different providers or those who accessed prescribed BZD/TRQs but non-prescribed opioids. This would have been useful to identify, as there may be different clinical implications based on the different clinical scenarios. Another limitation in the study is the way co-use was operationalized as using opioids and BZD/TRQ in the same day, but did not specify concurrent use (e.g., at the exact same time), which may have identified patients at higher risk of overdose. Definitions of co-use vary greatly from study to study, and a common definition of opioid and BZD co-use is needed. Replication is needed to continue the characterizing of factors associated with opioid and BZD/TRQ co-use. Finally, there is a misalignment between the recall period of the screener variable (non-medical opioid use in the past month), outcome variable (co-use in the past 3 months), and exposures (past 3 months, past 6 months).

**4.2 Conclusions**

While it is common practice for clinicians prescribing benzodiazepines and opioids to screen all patients for co-use, our findings have implications for clinical practice by suggesting that thorough screening should be done in patients lacking a high school degree/GED, patients who recently received mental health treatment of any kind, and patients who use cocaine or synthetic cannabinoids daily. Our findings suggest these patients may be at increased risk for co-use with opioids, and thereby at increased risk for fatal overdose.

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*TABLES AND FIGURES:*

Table 1. Participant characteristics by daily co-use.

|  |  |  |  |
| --- | --- | --- | --- |
|  |   | **Daily use of BZD/TRQ and opioids, past 3 months** |  |
|  |   |
|  | **Total** | **No** | **Yes** |  |
|  | N=417 | n=324 (77.7) | n=93 (22.3) | p-value a |
| **Sociodemographic characteristics and structural vulnerability**  | n(col%) | n(col%) | n(col%) |  |
| Location (study wave) |  |  |  |  |
| Baltimore City | 281 | 213 (65.7) | 68 (73.1) | 0.181 |
| Anne Arundel County | 136 | 111 (34.3) | 25 (26.9) |  |
| Age, mean (SD) | 45.7 (11.5) | 45.5 (11.7) | 46.2 (10.6) | 0.632b |
| Sex |  |  |  | **0.011** |
| Male | 258 (62.0) | 211 (65.1) | 47 (50.5) |  |
| Female | 159 (38.1) | 113 (34.9) | 46 (49.5) |  |
| Race/ethnicity |  |  |  | 0.066 |
| White, single race | 66 (15.8) | 45 (13.9) | 21 (22.6) |  |
| Black, single race | 307 (73.6) | 247 (76.2) | 60 (64.5) |  |
| Hispanic, Native American/Alaskan, multiracial, other  | 44 (10.6) | 32 (9.9) | 12 (12.9) |  |
| Did not complete high school/GED | 160 (38.4) | 113 (34.9) | 47 (50.5) | **0.006** |
| Full- or part-time legal employment as primary income source, past 3 months | 53 (12.7) | 44 (13.6) | 9 (9.7) | 0.319 |
| Currently unstably housed | 266 (63.8) | 206 (63.6) | 60 (64.5) | 0.869 |
| **Health care service access and utilization** |   |   |  |
| Has health insurance | 338 (81.3) | 261 (80.8) | 77 (82.8) | 0.665 |
| ER visit, past 3 months | 123 (29.6) | 89 (27.5) | 34 (37.0) | 0.078 |
| Received mental health treatment, past 6 months | 165 (39.6) | 115 (35.5) | 50 (53.8) | **0.001** |
| **Substance use and overdose** |   |   |   |  |
| Daily cocaine use, past 3 months | 88 (21.1) | 51 (15.7) | 37 (39.8) | **0.000** |
| Daily crack use, past 3 months | 177 (42.5) | 125 (38.6) | 52 (55.9) | **0.003** |
| Daily synthetic cannabinoid use, past 3 months | 38 (9.1) | 21 (6.5) | 17 (18.3) | **0.000** |
| Drinks alcohol 4+ times per week, past 3 months | 113 (27.2) | 86 (26.6) | 27 (29.0) | 0.646 |
| Any injection drug use, past 3 months | 144 (34.5) | 102 (31.5) | 42 (45.2) | **0.014** |
| Overdose, past 3 months | 68 (16.4) | 48 (14.9) | 20 (21.5) | 0.127 |

aPearson’s *X*2 test

bT-test

Table 2. Bivariate and multivariable models.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Unadjusted ORs** |  |  | **Final multivariable model** |  |
|  |  |  |  |  |  |
|  | N=417 |  |  | N=416 |  |  |
| **Sociodemographic characteristics and structural vulnerability**  |  OR |  95% CI |  p |  OR |  95% CI |  p |
| Location (study wave) |  |  |  |  |  |   |
| Baltimore City | ref |  |  | ref |  |   |
| Anne Arundel County | 0.71 | 0.42 - 1.18 | 0.182 | 0.83 | 0.46 - 1.50 | 0.536 |
| Age, mean (SD) | 1.00 | 0.98 - 1.03 | 0.631 | 1.02 | 0.99 - 1.05 | 0.153 |
| Sex |  |  |  |  |  |   |
| Male | ref |  |  | ref |  |   |
| Female | **1.83** | **1.15 - 2.91** | **0.011** | 1.68 | 0.99 - 2.87 | 0.055 |
| Race/ethnicity |  |  |  |  |  |   |
| White, single race | ref |  |  | ref |  |   |
| Black, single race | **0.52** | **0.29 - 0.94** | **0.030** | **0.38** | **0.18 - 0.81** | **0.012** |
| Hispanic, Native American/Alaskan, multiracial  | 0.80 | 0.35 - 1.86 | 0.611 | 0.95 | 0.38 - 2.39 | 0.917 |
| Did not complete high school/GED | **1.91** | **1.20 - 3.04** | **0.007** | **1.72** | **1.02 - 2.89** | **0.041** |
| Full- or part-time legal employment as primary income source, past 3 months | 0.68 | 0.32 - 1.45 | 0.322 |  |  |   |
| Currently unstably housed | 1.04 | 0.64 - 1.69 | 0.869 |  |  |   |
| **Health care service access and utilization** |   |   |   |   |   |
| Has health insurance | 1.14 | 0.62 - 2.09 | 0.665 |  |  |   |
| ER visit, past 3 months | 1.55 | 0.95 - 2.52 | 0.080 |  |  |   |
| Received mental health treatment, past 6 months | **2.11** | **1.32 - 3.37** | **0.002** | **2.11** | **1.27 - 3.52** | **0.004** |
| **Substance use and overdose** |   |   |   |   |   |
| Daily cocaine use, past 3 months | **3.54** | **2.12 - 5.90** | **0.000** | **3.59** | **1.98 - 6.49** | **0.000** |
| Daily crack use, past 3 months | **2.02** | **1.27 - 3.22** | **0.003** | 1.33 | 0.78 - 2.25 | 0.295 |
| Daily synthetic cannabinoid use, past 3 months | **3.23** | **1.62 - 6.42** | **0.001** | **3.09** | **1.39 - 6.90** | **0.006** |
| Drinks alcohol 4+ times per week, past 3 months | 1.13 | 0.68 - 1.88 | 0.646 | 1.21 | 0.68 - 2.14 | 0.524 |
| Any injection drug use, past 3 months | **1.79** | **1.12 - 2.87** | **0.015** | 0.99 | 0.55 - 1.78 | 0.971 |
| Overdose, past 3 months | 1.57 | 0.88 - 2.81 | 0.129 |  |  |   |